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ABSTRACT

The interrelationship of population growth, food production, and death rates is explored. Birth rates in China, Western Europe, and North America have significantly decreased in the five-year period from 1970-75. This is largely due to widening availability of family planning services and the growing desire to use them. Four European countries have reached stability in population growth: East and West Germany, Austria, and Luxembourg. Reasons for this stability include high levels of income, high levels of education and employment for women, and easy access to contraceptives. Death rates, however, have increased due to hunger and nutritional stress in areas such as Bangladesh, India, Ethiopia, and the Sahelian countries of Africa. Even in cases where food crises arise from civil insurrection, the groups most vulnerable to the stresses of starvation are children and the elderly. Food production in many countries has been so hampered by weather changes and abuse of ecological factors that current production cannot keep up even with limited population growth. Governments can try to reduce population growth by providing family planning services, satisfying basic social needs, educating all social groups about the effects of rapid population growth, providing alternative careers to motherhood, and reshaping national social and economic policies to encourage small families. (AV)

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Worldwatch Paper 8

World Population Trends: Signs of Hope, Signs of Stress

Lester R. Brown

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World Population Trends: Signs of Hope, Signs of Stress

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Introduction

The seventies have witnessed many changes in both population policies and trends, perhaps more than any comparable period in history. Mexico, which began the decade with a strongly pro-natalist stance, has done a complete about-face in population policy. France has liberalized its abortion laws. India is seriously considering the compulsory sterilization of males with three or more living children.

The decade has brought exciting advances as well as distressing failures. On the positive side, the growth in world population has begun to slow, reversing a longstanding trend of gradually accelerating growth that may have begun with the discovery of agriculture some 12,000 years ago. Population growth has slowed in rich countries and poor alike, paced by two of the world's four most populous countries—China and the United States.

The apparent decline in the birth rate of China between 1970 and 1975, the most rapid of any country on record, may be family planning's greatest success story. China's achievement is a hopeful sign, not only because the crude birth rate dropped from an estimated 32 to 19 in a five-year period of concerted effort, but also because China represents one-fifth of humanity. It indicates what a government committed to reducing fertility can do when it attacks the problem on several fronts simultaneously.

A second sign of hope, the decline by one-third of the U.S. population growth rate between 1970 and 1975, was not widely anticipated. The upturn in birth rates expected during the seventies, when the children of the postwar baby boom entered their prime reproductive years, has not materialized. New social trends, including an unanticipated drop in the marriage rate, steady growth in female employment, and a sharp upturn in female enrollment in graduate and professional schools, are undoubtedly contributing factors. Women now comprise 42 percent of the U.S. labor force and a fifth or more of the students in both law and medical schools, where female enrollments have doubled since 1970. Similar trends are evident in graduate schools of business, agriculture, and architecture.[1]

I am indebted to my colleague Bruce Stokes for his assistance with the research and analysis underlying this paper.

In Western Europe, where female participation in the labor force in some countries is even higher than in the United States, birth rates are falling in virtually every country. Four countries now have stable or declining populations; others are fast approaching stability.*

6 Most of the slowdown in the global population growth stems from declining birth rates, which are now either holding steady or edging downward in all but a handful of countries. The few that have rising birth rates are concentrated in Eastern Europe, where the recent adoption of pro-natalist incentives has reversed the longstanding decline in births.

Tragically, the slowdown in population growth is not due entirely to falling birth rates. In some poor countries population growth is being periodically checked by hunger-induced rises in death rates. These recent upturns in the national death rates represent a reversal of postwar trends, one which political leaders in the affected countries are not eager to discuss.

The complex population/food relationship of today would perplex even Malthus, who postulated two centuries ago that population growth tends to outstrip the supply of food. In some situations population growth now acts as a double-edged sword, simultaneously contributing to growth in food demand and to reduced food output. The two-way cut is most clearly seen and measured in oceanic fisheries, where the growing global demand for fish has led to overfishing and shrinking catches. It is also visible in land-based agriculture in densely populated poor countries, where overgrazing, deforestation, and overplowing are leading to soil erosion, desert encroachment, and the abandonment of cropland. It has been evident for some time that oceanic fisheries could collapse under the pressures of excessive demand. What is becoming equally clear during the seventies is that land-based food systems can also give way under intense pressure.

Population growth combined with the lesser effect of rising affluence has pushed food consumption ahead of production in recent years, leading to a depletion of world food stocks. Consequently, making it from one harvest to the next has become a major preoccupation for

*Unless otherwise indicated, calculations of population increases and decreases do not take immigration and emigration into account.

"The depletion of world food stocks has weakened both the capacity and the will of the international community to respond to food shortages."

the entire world, and more or less chronic food scarcity and unprecedented food price hikes have exacerbated nutritional stress in the world's poorest countries.

The recent hand-to-mouth situation contrasts sharply with the relative security of the fifties and sixties. Then, food reserves more than offset crop shortfalls. Then, the price of grain was comparatively stable, access to exportable supplies was assured, and the United States always stood ready to intervene whenever famine threatened. But now, during the seventies, the depletion of world food stocks has weakened both the capacity and the will of the international community to respond to food shortages.

In a world without an adequate system of food reserves, rising world food prices translate into rising death rates among the poorest of the poor. In such a world, crop failure in a rich country has an economic impact, but in a poor country it can have a measurable demographic impact as well.

Population Trends, 1970 to 1975

Sometime near the beginning of this decade, the rate of world population growth reached an all time high and then began to subside. At that point, the longstanding trend of accelerating population growth reversed itself. The world had passed the inflection point on the population curve.

In 1970, when world population growth was at or near its peak, human numbers grew by an estimated 1.90 percent. The most recent data show a marked decline since then to 1.64 percent in 1975. (See Table 1.) In most of the world the decline reflected falling birth rates and a global trend toward smaller families. But in a number of low-income, food-deficit countries, rising death rates came into play.

Table 1: World Population Increase, 1970 and 1975

	1970	1975
World Population (billions)	3.59	3.92
Rate of Annual Increase (percent)	1.90	1.64
Annual Increase (millions)	69	64

Source: Worldwatch Institute, see Appendix A.

Growth in world population, the excess of births over deaths, slowed from 69 million in 1970 to 64 million in 1975. The 1975 increase was slightly smaller than that in 1970 despite a substantial increase in the number of young people of reproductive age. More than anything else this progress reflects the widening availability of family planning services, including both contraception and abortion, and the growing desire to use them.

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Although all of the heavily used contraceptives, such as the pill, IUD, or condom, had existed prior to 1970, significant shifts in their relative importance have occurred. Use of the pill, spurred both by publicly supported clinics and commercial distributors, has increased on every continent.[2] At the same time, the early seventies saw a shift toward greater reliance on male sterilization. Vasectomies increased in popularity in the United States during this period, the total performed surpassing the more complex and costly female sterilization operation.[3]

While contraceptive use patterns changed, abortion laws were liberalized. At the beginning of 1971, 38 percent of the world's people lived in countries where legal abortions were easy to obtain. By early 1976, this figure stood at 64 percent, nearly two-thirds of the world. Few social changes have ever swept the world so quickly.[4]

The highly uneven efforts by governments to extend family planning services to their people during the 1970-75 period are reflected in the demographic trends of the world's geographic regions. All regions share some trends but not others. In no region did the population growth rate increase significantly. In Eastern Europe, the death rate was slightly higher in 1975 than in 1970, due to an increase in the elderly population. In South Asia, the historical decline in the death rate was arrested by rising nutritional stress. The overall rate of natural increase, the principal regional difference, slowed dramatically in some areas but not at all in others. (See Appendix A.)

The global slowing of population growth was concentrated in three geographic regions—Western Europe, North America, and East Asia. The population growth rate fell by almost one-half in Western Europe, and by a third in North America and East Asia. Western Europe, with 343 million people, cut its annual population growth from 0.56 percent in 1970 to 0.32 in 1975—a rate reduction without

"Meeting basic social and family planning needs can drive down the birth rate even where income levels are not high."

precedent for a large geographic area. North America and East Asia had populations of 236 million and 1,005 million, respectively, in 1975. The one-third decrease in North America's growth rate from 0.90 percent to 0.60 percent during the five-year span is continuing in 1976.

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No achievement is more impressive than the dramatic reduction of the population growth rate in East Asia. Influenced heavily by China's massive efforts to curb births, the region's growth rate declined from 1.85 percent to 1.18 percent. The reduction in the Chinese birth rate from an estimated 32 to 19, or 2.6 points per year, is the most rapid ever recorded for a five-year span, besting the earlier reductions of nearly 2 points per year achieved by Taiwan, Tunisia, Barbados, Hong Kong, Singapore, Costa Rica, and Egypt.[5] This pronounced fall-off should come as no surprise: the comprehensive Chinese effort focuses not only upon providing family planning services, including abortion, but also upon reshaping economic and social policies to encourage small families and upon an intensive public education campaign extolling the benefits of smaller families. East Asia's achievement is all the more noteworthy given the region's average income per person, which is quite low compared with West European and North American levels. Apparently, meeting basic social and family planning needs can drive down the birth rate even where income levels are not high.

Virtually every country in East Asia has a dynamic and highly successful national family planning program. Japan, South Korea, China, Taiwan, and Hong Kong invariably rank among those countries cited as models of effective family planning.

The other two Asian sub-regions—South Asia (principally the Indian subcontinent) and Southeast Asia (the region from Burma to the Philippines, including Indonesia)—have brought their population growth rates down slightly. India's birth rate inched slowly downward while a more marked decline took place in tiny Sri Lanka during the five-year period as both contributed to the overall drop in South Asia. The decline in Southeast Asia reflects modest declines in Thailand, Indonesia, and the Philippines, where family planning programs seem to be gaining momentum during the mid-seventies. Reports from Indonesia in 1976 indicate remarkably expanded receptivity to family planning in much of Bali and Java.

In some geographic regions the growth rate has changed little in either direction since the turn of the decade. Although some countries in Latin America, Eastern Europe, Africa, and the Middle East have measurably reduced their high birth rates, the declines either have been offset by a continuing decline in the death rate or have been too small to affect the regional averages. Only a few Latin American countries have been successful in reducing fertility. Among the smaller countries, Costa Rica and Panama have brought down birth rates most effectively. Among the larger ones, Colombia's progress has put it into a leadership position, while Mexico's recently launched family planning program is just beginning to show results. Brazil indirectly abandoned its pro-natalist policy in 1974 when it announced "that family planning should be available to all couples who want it, as a human right, not as a part of a policy to reduce rates of growth."*

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Within Europe the trends contrast sharply between West and East. In 1970 the birth rates in the two regions were close, 16.2 and 17.4, respectively. During the next five years, however, Western Europe's rate dropped to 13.7 while that of Eastern Europe actually increased slightly, ending the period at 18.0. During the early seventies the Eastern European birth rate had been declining slightly, but as pro-natalist policies were adopted in Poland, Czechoslovakia, and elsewhere, the rate turned sharply upward in the mid-seventies, more than offsetting the preceding decline.

The birth rates of the two principal regions in the Western Hemisphere differed sharply too. While the U.S.-Canadian birth rate fell from 18.2 to 14.8, that of Latin America changed little, ending the period at 35.5. Although North America and Latin America had populations of almost identical size in 1950, the picture has changed radically since then. Latin America is now adding four times as many people to its population each year as is North America. Mexico alone is adding more people than are the United States and Canada together.

Countries Achieving or Approaching Stability

As of 1975, four countries—the German Democratic Republic (East Germany), the Federal Republic of Germany (West Germany), Luxem-

bourg, and Austria—had stable or declining populations. Interestingly, none of these countries was among the lengthening list of those with an explicit policy of stabilizing population. Rather, the cessation of population growth sprang from a combination of economic, social, and demographic factors.

East Germany, bringing its births and deaths in line in 1969, was the first country in the modern era to do so.[7] Both the high levels of education and employment for women and the relatively low numbers of young people in the reproductive age bracket apparently made this balancing possible.

In West Germany, the second country to bring its population growth to a standstill, the number of births fell below deaths in 1972. There, the birth rate of 18 in 1966 dropped steadily before leveling off at just under 10 in 1975—perhaps the lowest birth rate on record. (See Figure 1.)

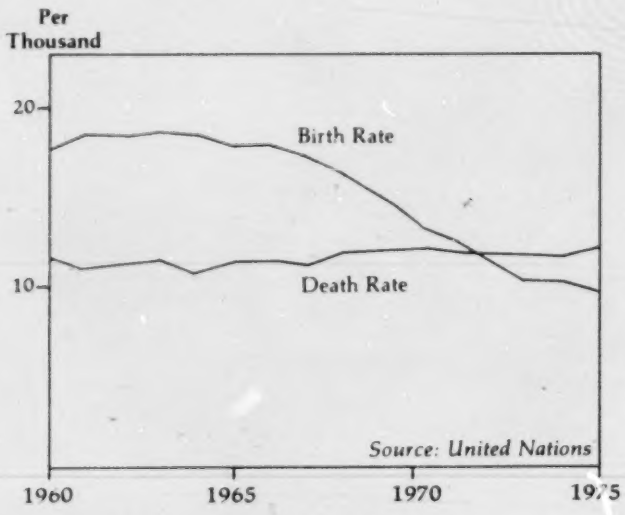

Figure 1: Birth and Death Rates in West Germany, 1960-1975

Low birth levels in West Germany reflect changes in attitudes toward childbearing and family size; the West Germans themselves call the demographic trend "Der Pillenknick," or "the pill pinch." An estimated one-third of all West German women use the pill, while a majority of the remainder rely on various other contraceptive techniques. A poll taken in West Germany in 1974 showed that 4 percent of adults wanted no children, 3 percent wanted one child, and 69 percent desired two children. A recent repeat of the same poll put the corresponding percentages at 7, 14, and 57 percent, helping to explain why the birth rate has dropped so low.[8]

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The populations of two smaller countries, Austria and Luxembourg, have also ceased growing during the seventies. With Austria holding her own since 1975, the German-speaking population of Europe, concentrated in the two Germanys, Austria, and Switzerland, is declining slightly.

All four countries that have thus far brought population growth to a halt are European. All four have high levels of income, high levels of education and employment for women, and easy access to contraceptives.

If recent trends continue, the United Kingdom and Belgium will essentially achieve population equilibrium sometime in 1976, bringing the total of countries to six. Together, these six countries contain 152 million people, or nearly 4 percent of world population. Although this percentage may seem small, it is nonetheless a short step toward the eventual stabilization of world population, and it demonstrates that population growth can come to a halt under the right conditions, even without an explicit policy to do so. (See Table 2.)

Several other countries have birth rates that are now reaching below 15, falling steadily, and approaching a balance with death rates. France and Italy, as well as several smaller European countries such as Sweden, Norway, Denmark, the Netherlands, and Switzerland, comprise this group. The United States, one of the world's four most populous countries, has also pulled its birth rate down below 15. Should the decline continue, this multinational group of 360 million people would reach population stability in a matter of years. Combined with those nations that have already stabilized their popu-

"Altogether, more than a billion people live in countries that have either stabilized their populations or could do so before 1985."

Table 2: Countries at or Near Population Stability, 1975

Country	Birth Rate	Death Rate	Annual Rate of Population Change (Percent)*	Actual Change in Population
East Germany	10.8	14.3	– .35	– 59,000
West Germany	9.7	12.1	– .24	– 148,000
Luxembourg	11.2	12.2	– .10	– 360
Austria	12.3	12.7	– .04	– 3,000
Belgium	12.3	12.0	+ .03	+ 2,900
United Kingdom	12.4	11.8	+ .06	+ 34,000

*Excludes both emigration and immigration.
Source: United Nations

lations and with the two expected to do so in 1976, the stabilized population would include 512 million people, or one-eighth of the world's people.

Virtually all of the remaining industrial countries, all the countries of Eastern Europe, the Soviet Union, Japan, Australia, New Zealand, and Canada, have birth rates between 15 and 20. This cluster of countries, all of which could conceivably stabilize their populations by 1985, contains some 535 million people. Altogether, more than a billion people live in countries that have either stabilized their populations or could do so before 1985.

How many other industrial countries will actually follow the two Germanys and the United Kingdom to population stability remains to be seen. A number are clearly moving in that direction. The U.S. birth rate is continuing to fall even as large numbers of young people move into the reproductive age bracket. The growing preference for small families was dramatically illustrated in a survey conducted in 1975 among wives aged 18-24, which indicated that 74 percent planned to have either one or two children. Eight years before, only 45 percent preferred one or two child families.[9] If the fertility level simply remains near the current level for the next decade, then it should begin to drop rapidly shortly thereafter as the groups reaching reproductive age shrink.

The age structures of Japan and the Soviet Union resemble that of the United States. The Japanese birth rate, which fluctuated within the narrow range between 18.9 and 18.6 from 1970 to 1974, dropped to 17.2 in 1975, and to 16.6 in early 1976. A survey of Japanese women, conducted every two years by the Population Problems Research Council, shows that for most women the ideal number of children is dropping sharply. As recently as 1971, 33 percent wanted to have two children, but, by 1975, 40 percent felt that two was the right number, and the percentage of Japanese desiring three or more meanwhile decreased accordingly. The desire of younger women for smaller families, combined with the shrinkage of age groups entering the reproductive years, may lead to a precipitous fall in the birth rate in the upcoming years, moving the country quickly toward stability.[10]

The weightiest demographic unknown in industrial countries is not in the Western countries and Japan, where the trends appear reasonably clear and somewhat predictable, but in Eastern Europe and the Soviet Union. During the late fifties and sixties, declining birth rate trends in the Soviet Union and the United States followed remarkably parallel courses. In recent years, however, the Soviet decline seems to have leveled off while that in the United States has continued.

It is unclear how long the political leadership in Eastern Europe will want to follow the strong pro-natalist policies adopted in recent years if resource scarcities continue. For example, the Polish Government attempted to raise food prices during the early summer of 1976, to bring them more in line with import prices, only to encounter widespread resistance of the sort that had unseated earlier governments. Poland had to partially rescind the price hikes in order to avoid civil disturbances.[11]

Almost all the East European countries face food problems resembling Poland's. Along with the Soviet Union, most have become heavily indebted to Western banks in recent years as they have found themselves living beyond their means.[12] Glaring housing shortages, particularly in the Soviet Union, also mirror the same potential pro-natalist backfire. At some point, policy-makers must reconcile the pro-natalist policies that aggravate these problems with the pressing need to solve them. At that point, Soviet planners may begin to link

population policies to their country's massive and uncomfortable dependence on food imports.

Problems within the Soviet Union are complex; the sharp differences in fertility levels among ethnic groups have become politically sensitive issues. Birth rates in the Russian Socialist Republic compare to those of Western Europe, while those in some of the less developed Soviet Socialist Republics, such as Tadjikistan, Turkmenia, or Kirghiz, are higher than those of India's more progressive states.[13]

These controversial issues veil the future direction of both population policies and fertility levels in Eastern Europe. Nonetheless, given the prevailing social trends, birth rates will probably not rise appreciably; any change is more apt to be registered as a decline.

The Tragic Rise of Death Rates

The seventies have witnessed at least temporary upturns in death rates in many poorer countries. Neither war nor epidemics, but hunger and nutritional stress are to blame.

From 1950 through 1970, the world's farmers and fishermen expanded their output more rapidly than the population grew. Between 1960 and 1972, the world expansion in grain production was particularly impressive as output per capita climbed from 583 pounds to 681 pounds. Since then it has fallen by some 35 pounds. The performance of fishermen during the same period was even more impressive; the catch weighed in at 21 million tons in 1950 and at 70 million tons in 1970. One of humanity's principal protein sources, the fish catch expanded at nearly 5 percent per year, raising consumption per person from 17 pounds in 1950 to 42 pounds in 1970.[14]

What few realized then was that a protein-hungry world, with a population approaching 4 billion, was beginning to put unbearable pressure on some oceanic fisheries. Overfishing, depleted stocks, and declining catches followed, and the upward trend in fish protein consumption was reversed. The worldwide catch began to fall, and in 1974 it still had not returned to the 1970 peak. With popu-

lation growing steadily, per capita fish consumption had declined 11 percent by 1974 from its 1970 peak.

16 As growth in food demand has outstripped production gains, world grain reserves have been depleted and prices have climbed. As recently as 1970, grain reserves, including both the carry-over stocks of grain and the grain equivalent of idled cropland in the United States, amounted to 89 days of world consumption. By 1974 reserves had dropped to just over 30 days, where they have since remained.[15]

The decline in stocks has been accompanied by sharp price increases. The world price of wheat, which ranged between $1.58 and $1.84 per bushel between 1960 and 1971, began to climb in 1972. Since then the annual price has fluctuated between $3.81 and $4.80 per bushel.[16] The depletion of world stocks and the rise in prices has led to a degree of global food insecurity unmatched since the period of devastation and hunger immediately following World War II. This rise in prices inconvenienced the rich and more complaints were heard at the supermarket checkout counter. But for the world's poor, for whom survival was a struggle under the best of circumstances, high prices often proved fatal.

The lack of food reserves has all but wrecked the international system for responding to crop shortfalls in individual countries. The international community, led by the United States, was able to stave off major famine during the fifties and sixties, most notably in India during 1966 and 1967 following two consecutive monsoon failures. Nutritionist Jean Mayer, now President of Tufts University, points out in commenting on the 1967 famine relief in the hard hit state of Bihar that "In the end, the famine was contained. Instead of the millions of deaths predicted, the highest of the fairly reliable estimates was only a few thousand."[17] The shipment of grain from the United States to India during the crisis period, the largest transfer of food from one country to another in history, was virtually all given as food assistance. For two consecutive years the United States shipped one-fifth of its wheat crop to India. Unfortunately, without adequate reserves, massive unilateral rescue efforts of this sort are no longer possible.

Death rates provide the most readily available statistical indicator of severe nutritional stress. Whenever food scarcities begin to develop,

"The lack of food reserves has all but wrecked the international system for responding to crop shortfalls in individual countries."

the weaker members of society, usually infants and the elderly among the lower income groups, suffer most. Though they are not necessarily discriminated against, they are invariably least able to withstand the acute physiological stresses of near starvation. Data now appearing indicate that the brunt of global food scarcity during the seventies has been borne by the poorest and weakest people in the poorest countries.

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Some of the countries most severely affected by food scarcity have never had even a census, much less a system of registering births and deaths that yields reliable monthly vital statistics like those available in the more advanced countries. But despite the time lag involved in assessing the demographic impact of food scarcity and soaring food prices, data are now becoming available for a number of countries and from a variety of sources. They give a crude approximation of the human toll in a world where food reserves are virtually nonexistent, where food is scarce and unevenly distributed, and where population growth is still rapid.

Analysis of the population-food relationship is made knottier by the confusion of causes and triggering events. The deterioration of a land-based food system due to overgrazing, deforestation, or overplowing is invariably brought into focus by a drought or a flood. But the drought or flood does not cause so much as trigger the crisis, bringing it into the public ken. More often than not, severe soil erosion and even the total loss of topsoil escape notice, while natural disasters command more than their fair share of attention. The newsworthiness of triggering events often obscures the fact that in some of the poorer, more densely populated countries local food production capacity is quietly deteriorating and in some cases being irreversibly destroyed.[18]

The point of this analysis is not that hunger is new. In some parts of the world, chronic and seasonal hunger is often an integral part of life. What is new is the unsettling reversal in the seventies of the gradual improvement in per capita food consumption and nutrition that characterized the fifties and sixties.

Scarcity is global in an integrated world food economy, but the most severely affected countries are the poorer ones. The impact of global food scarcity on the people of Bangladesh has been particularly

harsh. Twice during the seventies food shortages have been followed by severe nutritional stress and loss of life. The first of these shortages occured in 1971/72, when the crop was adversely affected both by the insurrection and by unfavorable weather conditions. In 1974/75, extensive flooding put the rice harvest far below expected levels and below the levels needed to meet minimum needs.[19] The flooding, among the worst in the country's history, may have been in part the product of progressive deforestation in the Nepalese and eastern Indian watersheds where two of Bangladesh's principal rivers originate.

Like most poor countries, Bangladesh does not have the comprehensive national registry of births and deaths needed to assess precisely the impact of food shortages on its population. However, detailed data on births and deaths over the past decade are available for one district. As part of its research program, the International Cholera Research Laboratory has kept meticulous records for Matlab Bazar, the district in which it is located. With an almost entirely rural population of 120,000, Matlab Bazar is typical of Bangladesh as a whole.

The data for Matlab Bazar from 1966/67 to 1974/75 are summarized in Table 3. A Ford Foundation analysis of the impact of the Bangladesh war for independence from Pakistan indicates that the actual loss of life in combat was rather small compared with the number of lives claimed by hunger. The sub-groups that shouldered the highest risks "were the very young and the very old."[20]

The Ford Foundation report points out that daily per capita cereal consumption, which averaged about 15 ounces during the sixties, probably fell to a near starvation level of 12 ounces in 1972. The data for Matlab Bazar indicate that the death rate climbed from an average of 15.3 per thousand for the 1966-70 period to 21.4 in 1971/72. An extrapolation to the entire country indicates a nationwide increase in deaths of 427,000. This figure is based on a comparison of 1971/72 to the more normal 1966-70 base period and on the Ford report's assumption that Matlab Bazar is a representative province.

In 1972/73, Bangladesh's rice crop was again poor but in 1973/74, a bumper-crop year in most of the world, it recovered strongly. In 1974/75, crop levels fell off again, this time to well below the levels

Table 3: Death Rate in Matlab Bazar, 1966/67 to 1974/75

Year	Death Rate
1966/67	15.0
1967/68	16.6
1968/69	15.0
1969/70	14.9
1970/71	14.8
1971/72	21.4
1972/73	16.2
1973/74	14.2
1974/75	19.8

Source: International Cholera Research Laboratory

needed to meet national needs.[21] A Bangladesh representative at the 1974 World Food Conference in Rome held a press conference imploring the international community to come to his country's aid. But because additional food relief exports would further raise food prices in the supplier countries, the response was both belated and inadequate; consequently, the death rate in Matlab Bazar climbed again, reaching 19.8 in 1974/75.[22] If the 1974/75 death rate is compared with that for the base period and extrapolated to the entire country, it shows an increase in deaths of 333,000 in that year.

The most recent data available on mortality for Bangladesh are those compiled in the Companiganj district by a Johns Hopkins University medical team currently organizing a district-wide community health program emphasizing maternal and child health care.[23] Their data for calendar year 1975 show a death rate of 26.3 in a district that they estimate to have had a normal death rate comparable to that of Matlab Bazar. This level of deaths for Companiganj is even higher than that indicated for Matlab Bazar, perhaps partly because the calendar year data for Companiganj coincide more closely with the period of severe food shortage. Whether the statistics for Matlab Bazar or the grimmer data for Companiganj are used to extrapolate the nationwide increase in deaths, it is clear that hunger exacted a heavy toll in human life in Bangladesh twice during the last five years.

Table 4: Death Rate in 1975 by Size of Landholdings, Companiganj, Bangladesh

Size of Land Holding (Acres)	Death Rate
None	35.8
.01-.49	28.4
.50-2.99	21.5
3.00+	12.2

Source: The Johns Hopkins University School of Hygiene & Public Health, preliminary data.

Even within a poor society, the poorest are the hardest hit. A classification of deaths in Companiganj for 1975 by the same Johns Hopkins medical team showed that death rates differed profoundly according to the victims' land-owning status. The less land a family had, the less likely were all of its members to survive a food crisis. Death was a frequent visitor to that one-fourth of the population that owned no land at all. A death rate of 36 within the landless group indicates extreme nutritional stress. (See Table 4.) Those with three acres or more had a death rate of 12, only fractionally higher than that for those living in Western industrial countries. Perhaps the most disturbing message of these figures is what they portend for the future as population growth further reduces the average size of landholdings and swells the landless population.

Bangladesh suffered in company during the seventies. In 1972 uncommonly poor harvests in several key producing countries led to an absolute decline in world grain production of 3 percent—the first significant decline in year-to-year output in two decades. That same year, the Soviet Union imported nearly 30 million tons of grain, the largest importation of food by any country in history. In the United States crop levels sank below average, and the Indian subcontinent reaped one of the poorest harvests in many years.

India's poor crop came in after food-production efforts slackened following the highly successful Green Revolution experience during

"Death was a frequent visitor to that one-fourth of the population that owned no land at all."

Table 5: Death Rates in Three States in India, 1970-72

	1970	1971	1972	Increase in 1972 over 1971
Bihar	14.1	14.2	18.3	4.1
Orissa	16.4	15.5	20.0	4.5
Uttar Pradesh	21.6	20.1	25.6	5.5

Source: Indian Ministry of Health and Family Planning.

the late sixties and early seventies. Indeed, India had been able to feed an estimated 8 to 10 million refugees from Bangladesh during 1971 and early 1972 from its record high food reserves. When the monsoon failed in the summer of 1972, India found that it had used up its food reserves to aid Bangladesh while the Soviet Union had secretly tied up most of the world's exportable wheat supplies—leaving little for India or anyone else. Even available grain could be purchased only at an extraordinarily high price.

Unable to obtain enough food from abroad, the Indian government stood by helplessly while food consumption dropped sharply. The poorer states, depending heavily on rainfed production of sorghum, millet, and wheat, were the most severely affected. Death rates climbed sharply in Bihar, Orissa, and Uttar Pradesh in 1972. (See Table 5.)

In the poverty-ridden state of Uttar Pradesh in northern India, the death rate climbed from 20.1 in 1971 to 25.6 in 1972. If increased nutritional stress accounted for the difference, then the lack of food claimed 493,000 lives. In the smaller states of Bihar and Orissa, the data for 1972 suggest, an additional 235,000 and 101,000 lives were lost respectively.[24] In these three states alone, hunger claimed an estimated 829,000 lives. Nationwide, the decrease in food supplies probably cost well over a million lives.

More than anything else the experience of 1972 taught the Indian government that it had to assume the responsibility for feeding its people. The United States, with its reserves depleted and food prices climbing at home, could no longer be counted on to launch massive

rescue efforts in emergencies. And with the price of wheat soaring and the cost of a rescue effort increasing proportionately, the international community expressed little interest in bailing India out. As a result, roughly a million lives, mostly those of children, were sacrificed on the altar of food scarcity.

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Sri Lanka, far better off than both India and Bangladesh when measured by most economic and social yardsticks, was also hit hard by the tightening world food supply. Heavily dependent on imported food and energy, the economy reeled from the shock when the prices of both rose abruptly. In Sri Lanka, as in its large neighbors to the north, the lowest income groups were most vulnerable to both the first jolt and the aftershocks of the food shortage. Workers' wages had edged up only modestly while the price of food had nearly tripled. The International Planned Parenthood Federation in London reported that death rates among workers and their families on the tea estates jumped from 11.0 in 1973 to 18.7 in 1974, a rise of nearly two-thirds.[25] If the same pattern held here as prevailed in other famine-struck poor countries, a majority of these additional deaths were those of the children of the estate workers.

Outside Asia the sheer numbers of people caught in the often fatal food squeeze were fewer, but the plight of the hunger-stricken groups was, if anything, worse. In countries as far apart as Haiti and Ethiopia, unbearable population pressures on the land led to the loss of soil and the abandonment of cropland.

In the western hemisphere this grim sequence has been unfolding most rapidly in the once-fertile island of Haiti. Arthur Candell writes in *World Environment Report* that ". . . the land produces less and less each year, while the population soars." "Haiti's last forests are depleted," he elaborates further, "flash floods pour down scarred arroyos and empty their silted waters into the sea. Some observers feel it is too late to reverse the ecological disaster in Haiti. The eroded and leached mountain soil can no longer support tree growth."[26]

Candell's piece describes graphically the deteriorating conditions that were brought into focus by drought and that led to the famine threat of early 1975. By mid-1975, the Haitian Government estimated, 300,000 people faced starvation. By mid-July, CARE, supported by

AID, was feeding 120,000 in the threatened area.[27] Haiti's small size and its proximity to the United States made the rescue operation much simpler than those in larger, more distant lands: the Haitian people survived the famine threat with a minimal loss of life.

Countries more remote from the North American breadbasket have fared less well. Population pressure on the fragile desert ecosystem has been steadily gathering force in the African countries that border the Sahara. On the southern fringe of the Sahelian zone, a prolonged drought beginning in the late sixties and continuing into the seventies brought the deteriorating situation into painfully sharp focus.

The six countries most seriously affected by the African drought were Senegal, Mauritania, Niger, Upper Volta, Chad, and Mali. Together they then contained 22 million people—a large segment of them nomadic herdsmen wholly dependent on their cattle, goats, and camels for their livelihood. As the drought intensified, the nomads wandered widely, seeking water and grass wherever they could find it. When their quest ended in failure, they sought to sell whatever emaciated animals remained. For countless thousands the loss of livestock was total. The animals on which they had depended directly for food and indirectly for milk, wool, and meat to exchange for basic staples in the marketplace were gone.

With no means of support and no food, people capable of eking out an existence in the harshest of environments were forced into feeding camps. The deserts were moving southward and, along with the grasslands, the nomad's traditional way of life had been destroyed, perhaps permanently. The once proud nomads had become "ecological refugees."

In all the Sahelian countries the nomads represent an important segment of the population. And in every case they suffered most. Thousands made it to camps in such a weakened state that they died shortly thereafter. Many never made it to camps, perishing en route.

The Sahelian crisis had fastened its grip well before the outside world finally began to take notice in mid-1973. Many of the Sahelian people were in such desperate straits that only a massive airlift of food saved them. By the time relief arrived in the more remote areas, tens of thousands either had already died or were too weak to re-

cover. There is no record of how many lives were claimed as food systems collapsed all across Africa. In an appearance before a Congressional Committee after a tour of the Sahelian zone, Michael Latham, Professor of International Nutrition at Cornell University and a Member of the Committee on International Nutrition Programs of the National Academy of Sciences, testified that the number of lives lost was probably somewhere between 100,000 and a quarter of a million; no one will ever know for sure, he said.[28]

To the east an equally grisly crisis was unfolding in the mountainous kingdom of Ethiopia, ruled by the ancient Haile Selassie. There, the famine became even more serious as efforts were made to keep it a secret from the outside world. One of the most costly, life-consuming cover-ups in history, the Ethiopian disaster eventually claimed an estimated 200,000 lives and the throne to which Haile Selassie, one of the world's longest reigning monarchs, had clung for 47 years.[29]

Ethiopia, like Haiti and the Sahelian countries, is evolving into an ecological disaster area. Once heavily forested, the country now has less than 5 percent of its forest cover remaining. Soil erosion is widespread. One diplomat described the situation well when he said the country is quite "literally going down the river."[30]

The Imperial Ethiopian Government first attempted to hush up the unfolding famine with claims that reports of starvation were overly dramatic. The diplomatic community, the UN, and other international relief agencies operating in Ethiopia remained silent accomplices. Though their fears that speaking out would jeopardize their working relationship with Ethiopian officials were perhaps legitimate, their failure to alert the world to Ethiopia's plight is no less forgivable than that of the narrow-minded politicians who masterminded the attempted cover-up.

Two provinces, Wollo and Tigre, were the most severely affected. Desperate people in these provinces formed human chains across the highway, stopping vehicles and begging for food. Many tried to make it to the larger cities. In some areas 90 percent of the cattle were lost, including many of the draft animals needed to prepare fields for planting the next crop.[31]

Whole villages perished. The Imperial Ethiopian Government (IEG) delayed setting up relief camps for fear that people, once in them,

"One of the most costly, life-consuming cover-ups in history, the Ethiopian disaster eventually claimed an estimated 200,000 lives."

would never leave, becoming permanently dependent on either the government or international relief agencies. And in a sense the officials were right. The loss of grazing lands and topsoil represented the destruction of any means for earning a livelihood. Like the nomads in Chad and Niger, many homeless and jobless Ethiopians would become ecological refugees.

Somalia fared only marginally better. At one point in early 1975, a quarter of a million Somalis swelled relief camps. During one four-month period, 12,000 of them, mostly children, died.[32]

Wherever acute food shortages occur, their demographic and social effects follow a common pattern. Inevitably, the poor suffer most. The countries most devastated by food scarcity during the seventies have been the poorest ones, and within these the poorest groups—the workers on the tea estates in Sri Lanka, the landless laborers in Bangladesh, those living in the poorest states in India, and the nomads in the Sahelian zone countries of Africa—have paid the highest price. Even during the food crisis of 1971-72 in Bangladesh, a crisis partially attributable to civil insurrection, death picked most of its victims not from the troops but from the more traditionally vulnerable groups—children and the elderly.

Although death rates measure the principal demographic effect of prolonged hunger, they do not measure the social impact. For every person who dies, scores or even hundreds more may suffer and lie close to death. The true social cost of food shortages must take into account these hapless individuals, as well as the millions of infants and children who somehow survive prolonged periods of semistarvation only to suffer irreparable brain damage in the process.

The Population Prospect

U.N. projections show world population increasing from the current four billion to some 10 to 16 billion before eventually leveling off.[33] From a purely statistical point of view, these projections are quite sound; but when viewed in the larger picture of ecological stresses (even those associated with current population levels), technologies, and social structures, they do not hold up. Research at the Worldwatch Institute on stresses upon the world's principal biological

systems—forests, fisheries, grasslands, and croplands—indicates that in many situations these systems have already reached the breaking point.

26 The hunger-induced rise in death rates in the poorest countries is likely to wake up governments, particularly those of poor countries. After the depletion of world food stocks in the early seventies, it was widely assumed that the higher death rates were a side-effect of a temporary, self-correcting situation. But are they? Is the world likely to produce more than it consumes in the foreseeable future and thus to be able to rebuild depleted world food reserves? Or is the rebuilding of stocks to satisfactory levels an exceedingly difficult process, hindered or even prevented by continuing rapid population growth?

When 1977 begins, the world will enter its fourth year of scraping along with food stocks equivalent to just over a month of consumption, little more than "pipeline" supplies.[34] If the depleted stocks are not soon replenished, restoring some measure of security to food supplies, governments of food-deficit countries may be forced to rethink population policy. Indeed, short supplies are already influencing population policy in food-importing countries such as India.

The pressures to slow population growth mount as the associated stresses become more evident. Not all such stresses are related to food scarcity or insecurity of supplies. In India economic planners have impressed on the political leadership the virtual impossibility of raising living levels unless the population growth curve is quickly flattened out. The record of the past decade has been one of running hard simply to stand still, as rising world prices for oil and wheat put India on an economic treadmill.

In Mexico one of the early manifestations of population stress was rising unemployment. Political leaders became alarmed when they realized that even the rather impressive 7 percent annual economic growth simply could not provide enough jobs for the new entrants into the labor force. Coupled with the return to food-deficit status in the seventies following the dramatic Green Revolution gains in food production during the sixties, the unemployment rate induced an abrupt turnabout in Mexican population policy. In April 1972, the Government abandoned its pro-natalist stance and announced that it was launching a nationwide family planning program.

"If the depleted food stocks are not soon replenished, governments of food-deficit countries may be forced to rethink population policy."

The Chinese government has long been aware of the risks and deleterious consequences of continuing population growth in a country containing one-fifth of humanity. Anxious to preserve the hard-earned gains in per capita food consumption and social amenities, the Chinese leadership has decided to apply the demographic brakes vigorously.

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Concern over the population problem manifests itself in various ways and at various levels in different parts of the world. In the United States, concern over continuing population growth is most acute at the local level. Many American communities are now actively resisting further growth. In Japan, pollution has become a serious and sensitive political issue during the seventies. Coupled with increasingly vulnerable dependence on external supplies of food, energy, and other raw materials, population-related environmental stress is leading to a resurgence of concern among ordinary citizens and among government officials. In the Netherlands, a similar set of circumstances has helped increase awareness of population problems, and, apparently as a consequence, decrease the Dutch birth rate sharply.

In Egypt, the leadership was jolted into family planning action by a calculation that indicated that the population increase in the Nile River Valley during the period the huge Aswan High Dam was under construction would totally absorb the additional food production it would make possible.

Perhaps the most surprising development in population thinking has taken place in Canada, where deepening concern about future resource supplies is influencing public discussion and thinking. Many Canadians are disturbed by the recent loss of the traditional exportable energy surplus, a loss that occurred as domestic needs soared. Agricultural planners, alarmed at the sacrifice of the most fertile cropland to urban sprawl, fear Canada's exportable food surplus may also dwindle. A recent study by the Science Council of Canada suggests trying to limit the end-of-century population to 29 million, an inarguably modest increase over the current 22 million.[35] If such studies lead a country as richly blessed with resources as Canada to be concerned over its comparatively modest population growth, what would similar studies prompt other less well endowed countries to think and, more importantly, to do?

The goal of national population policies has shifted in several countries during the seventies from slowing population growth to stabilizing population. Among the governments seeking zero population growth are those of India, China, Mexico, and Bangladesh. India and China, the world's two most populous countries, want to halt growth by the year 2000.

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Once a government recognizes the need to put the brakes on population growth and decides to do so, tactical decisions remain. Governments may act to slow population growth on five distinct fronts: the provision of family planning services; the satisfaction of basic social needs, such as nutrition, reduced infant mortality, and education; the education of all social and income groups about the effects of large families and rapid population growth on the individual, the family, and society at large; the provision of alternative careers to motherhood, and equal rights for women; and the reshaping of national economic and social policies to encourage small families. The two countries that have moved on all five fronts simultaneously, China and Singapore, have been spectacularly successful in reducing their growth rates.

Of these five fronts, the provision of family planning services is central. The U.N. Conference on Population at Bucharest in 1974 resolved that all couples have the right to plan their families and that governments had to accept responsibility for ensuring that they had the means to do so.[36] Two years have passed since the conference, but the world is far indeed from achieving that goal. Even the United States, a country with relatively successful family planning programs, is not yet reaching its entire population with information and services.

A growing body of evidence, as well as common sense, indicates that fertility levels fall most rapidly in societies in which basic social needs are satisfied. Adequate nutrition, health services (particularly those that lower infant mortality), and education all influence fertility. But the social indicator that correlates most closely with declines in fertility appears to be education for women, particularly at the lower school levels.

The effects of rapid population growth must be widely understood before the growth itself can be tamed. Unfortunately, few govern-

"The goal of national population policies has shifted in several countries during the seventies from slowing population growth to stabilizing population."

ments, and thus few citizens, have a thorough understanding of the issues. If more governments knew that a seemingly innocuous 3 percent annual rate of population growth yielded a nineteenfold increase in a century, more would enact effective population policies on that knowledge. More would also educate people on the adverse effects of both large families and the close spacing of individual children on living standards, health, and personal development.

Expanding employment opportunities for women can also help curb birth rates. If women are not to spend most of their productive years bearing and rearing children, then they must be provided with alternative areas of endeavor and other means of self-fulfillment. Western Europe, Eastern Europe, the Soviet Union, North America, and China have been most successful so far in recognizing and utilizing women's abilities and talents.

Without risking sizable capital outlays, governments can help lower birth rates by reshaping economic and social policies. In many countries, economic and social incentives and structures were originally designed to encourage large families. In others, the pressure to reproduce is inadvertent. In all, certain beneficial social changes can flow from new laws and incentives. Raising the minimum age of marriage can reduce family size. Tax policies that limit the number of "tax-deductible" children serve the same end. Policies governing maternity leave, social security, and access to education as well as to governmental jobs can be molded to promote small families.

As governments begin to grasp the social consequences of continuing population growth, a few, including China, Singapore, Barbados, and Costa Rica, have become determined to do whatever is necessary to rein population growth. Others have failed to act quickly enough. India was one of the first countries to recognize the population problem officially, but its success in implementing effective family planning programs has been limited. As a result, the Indian government finds itself sanctioning, as a last resort, the use of compulsory sterilization. The legislature of Maharashtra, a state with 54 million people, passed with just one dissenting vote a bill calling for compulsory sterilization of all males with three or more living children. Furthermore, the bill proposed compulsory abortion of any pregnancy that would result in a fourth child.[37]

Analyzing this recent shift in Indian population policy, Kaval Gulhati of the Centre for Population Activities quotes the Maharashtra State Minister of Health as he explains the reasons for adoption of such draconian measures: "We have tried every trick in the book and now we have come to the last chapter." He predicted that ". . . the rest of India will follow our lead. They are watching and waiting. All developing countries with limited resources will have to think of this matter."[38]

India will not be the only country to find itself in such dire straits. What separates the Indian Government from those of many other densely populated poor countries is India's understanding of the impossibility of coping with a population multiplying ten-to twenty-fold per century. Its recent efforts reflect not only the desirability but the necessity of slowing population growth if major human catastrophes are to be avoided.

At least a score of countries would, if their current population growth of 3 percent or more per annum continues, be confronted with a nineteenfold increase in one century, or three generations. Some, such as Algeria and Mexico, already have a quarter century of 3 percent growth behind them and a great deal of momentum as they enter the second critical quarter. Conceivably, even probably, countries with such rates that delay too long before abandoning this demographic path will be forced to consider compulsory limitation of family size not at three children—which India is now doing—but at two or fewer.

Speeches by national political leaders, U.N. officials, and others are sprinkled with references to the prospect of a doubling of world population by the end of the century or over the next generation. But at the global level, this bit of multiplication becomes an abstraction with little meaning. Though often taken as inevitable, such an increase may not even be realistic.

One way to put into perspective the prospect of a twofold population increase over the next generation, or indeed at any time in the future, is to make a list of countries that can seriously entertain such a notion. Including only those countries able to meet even the most basic needs associated with population growth—food, water, and energy—the list is remarkably short. For the great majority, a dou-

"For the great majority of countries, a doubling of population will yield potentially unmanageable ecological, economic, and political stresses."

bling of population will yield potentially unmanageable ecological, economic, and political stresses.

The key to the speedy adoption of appropriate population policies in the poorest countries is likely to be the realization, squarely-faced, that the only real choice governments have before them is not whether population growth will slow, but how. Will it drop because birth rates fall quickly, or because the sporadic rises in death rates witnessed during the last five years continue, becoming even more pronounced as local food producing systems deteriorate further and as food scarcities become even more serious?

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Appendix A

World Population Growth by Geographic Regions, 1970 and 1975

Region	Crude Birth Rate	Crude Death Rate	Natural Increase (Percent)	Population (Millions)	Natural Increase (Millions)
North America					
1970	18.2	9.2	.90	226	2.04
1975	14.8	8.8	.60	236	1.42
Western Europe					
1970	16.2	10.6	.56	333	1.89
1975	13.7	10.5	.32	343	1.12
Eastern Europe					
1970	17.4	9.1	.84	368	3.14
1975	18.0	9.4	.86	384	3.31
East Asia					
1970	30.6	12.1	1.85	941	17.43
1975	19.6	7.8	1.18	1005	11.91
Southeast Asia					
1970	42.1	15.5	2.66	278	7.40
1975	38.6	15.3	2.33	317	7.37
South Asia					
1970	40.8	15.9	2.48	709	17.57
1975	37.1	15.8	2.13	791	16.89
Middle East					
1970	44.3	15.5	2.88	136	3.91
1975	41.7	14.5	2.72	155	4.22
Africa					
1970	47.1	21.0	2.61	312	8.16
1975	47.1	20.0	2.71	355	9.65
Latin America					
1970	37.4	9.7	2.77	276	7.64
1975	35.5	9.0	2.65	317	8.39
Oceania					
1970	20.9	9.0	1.19	15	.18
1975	17.4	8.1	.93	17	.16
World					
1970	32.2	13.2	1.90	3594	69.36
1975	28.3	11.9	1.64	3920	64.44

Source: This table is constructed from country data published by the United Nations and the U.S. Bureau of the Census, except for those countries where more recent data are available from published studies or national surveys.

Appendix B

Estimating Chinese Population Growth

Any effort to calculate the world rate of population growth is heavily influenced by estimates for China, which comprises one-fifth of the world's population. There are no official national data on the current size of China's population, its birth rate, or its death rate, but several efforts have been made to develop such information. The range of estimates has been summed up by Tomas Frejka in an article in *People* published by the International Planned Parenthood Federation. An abbreviated version of these estimates appears in Table A.

To some degree, different estimates reflect the times when the assessments were made. Those such as John Aird's, which were made in the late sixties and early seventies, have rather high birth rates and death rates, while more recent estimates, such as R.T. Ravenholt's, are much lower. This seems consistent with a widely shared observation that the declines in fertility in China during the seventies are without precedent. As Frejka points out in his article, China may now have "the most effective and efficient large-scale and comprehensive population policy in the developing world."

The Worldwatch estimate of the birth rate is based on the latest available data for various provinces, cities, and rural communes within China. The data, which were gleaned from numerous sources, are presented in Table B.

Altogether, the political units for which data on births are available contain roughly 200 million people, or one-fourth of the national total. They represent a wide geographic distribution, including two coastal provinces and two inland provinces. Both cities and rural communes are included. The data upon which we have based our own estimates are from close to a dozen different sources, including demographers, medical doctors, China scholars, and other responsible analysts.

The basic technique used to arrive at China's birth rate was to update to 1975 the figures available for the various political units and to extrapolate these to the entire country, adjusting for various biases in the available data such as a disproportionate share of urban data. This approach yielded a 1975 birth rate of 19 for the country.

Estimates of the death rate in China range from a high of 13, used by Aird in estimates made some years ago, to a low of 6 by Ravenholt. Ravenholt, an epidemiologist by training, contends in a recent, unpublished paper that if malnutrition has been almost entirely eliminated and if infectious diseases have been brought largely under control, as is claimed by the Chinese themselves and by visitors to China, the death rate must be quite low ". . . unless the Chinese have invented new ways of dying." We have elected to use a death rate of 8, somewhat higher than Ravenholt's estimate, because, while basic social needs are largely satisfied, life is still somewhat harsh in parts of China, particularly in the rural areas.

Using a birth rate of 19 and a death rate of 8, we conclude that the population of China grew in 1975 by 1.1 percent. This represents both a remarkable social and demographic achievement and an important contribution to the slowing of world population growth.

Table A: People's Republic of China: Population Estimates

Demographic Measure	John S. Aird United States Department of Commerce circa 1972	United Nations 1973	Leo A. Orleans United States Library of Congress 1975	Worldwatch Institute 1975	R.T. Ravenholt United States Agency for International Development 1975
Population size (millions)	930	839*	850	823	876
Birth rate (per 1,000 population)	37	27	27	19	14
Death rate (per 1,000 population)	13	10	12	8	6
Rate of natural increase (percent)	2.4	1.7	1.5	1.1	.8

*Includes Taiwan, 14 million

Sources: Tomas Frejka, "One-Fifth of Humanity," *People*, Vol. 3, No. 3, 1976; Worldwatch Institute.

Table B: People's Republic of China: Birth Rates in Various Political Units, 1970-1974

Area	Population Circa 1974 (Thousands)	Birth Rate (Per Thousand) 1970	1971	1972	1973	1974
Provinces[a]						
Hunan	48,029	15.0[c]				
Inner Mongolia	7,724				28.6[d]	
Kiangsu	71,823				21.9[d]	
Kwantung	50,149	30.0[c]				
Cities[b]						
Anyang	252			27.0[e]		
Canton	2,710			19.0[e]		
Changsha	825	9.7[c]				
Loyang	725			23.0[e]		
Peking	8,487		18.8[f]			
Shanghai	10,888		12.0[g]	10.8[h]	10.6[i]	9.2[j]
Sian	1,889			22.0[e]		
Soochow	796			10.8[e]		
Rural Communes						
Hsu Hang (Near Shanghai)			18.0[h]	15.0[h]		
July First (Near Shanghai)				12.0[k]		
Tangwen (Near Shanghai)						9.9[l]
Unnamed (Near Canton)				20.0[k]		
Rural County (Near Peking)	450		21.0[i]			
Unnamed (Near Peking)	46		24.0[i]			
Unnamed (Near Shanghai)	36		18.5[f]			
Unnamed (Near Sian)				10.5[l]		

Sources:

a. Provincial population size from *Population Estimates for the Provinces of the People's Republic of China: 1953 to 1974;* John S. Aird, U.S. Department of Commerce, Series P-95, No. 73, February 1974.

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